Remarks/Arguments

35 U.S.C. §103(a)¶

Claims 1, 6 and **11** and are rejected under 35 U.S.C. 103(a) as being unpatentable over *Gadeyne et al* (U.S. 6,359,663) in view of Ho *et al* (U.S. 6,208,327).

Applicant's independent Claim 1, as amended herein recites the originally filed limitations:

> "A method for reducing sparkle artifacts in a liquid crystal imager, comprising the steps of: gamma correcting a video drive signal; and slew rate limiting at least a portion of said **gamma corrected video drive** signal."

Applicant's independent Claim 6, as amended herein recites:

> An apparatus for reducing sparkle artifacts in a liquid crystal imager, comprising:
> a device for gamma correcting a video drive signal for providing a gamma corrected video drive signal; and
> a slew rate limiter coupled to said device for gamma correcting so as to receive said gamma corrected drive signal, for slew rate limiting said gamma corrected video drive signal.

Applicant respectfully submits Gadeyne fails to teach or suggest slew rate limiting a gamma corrected video drive signal as recited in applicant's claims 1 and 6. Further, Further, Gadeyne teaches away from slew rate limiting a gamma corrected video drive signal as recited in applicant's claims 1 and 6.

The office action states Gadeyne teaches how to slew rate limit the video signals because Gadeyne teaches process delaying a video signal in order to match the processing delays and reduce artifacts. The office action states Gadeyne discloses a first video signal converted into a second video signal so that the faster luminance response of a picture element of the first video signal is slowed down in order to match the luminance response in time and amplitude to the known slower luminance response of the same or another picture element for the opposite change of the first video signal (column 3, lines 3 5-42). Applicant respectfully disagrees. A teaching of making equal luminance rise and fall times and amplitudes is not a teaching to insure that **successive output signals ... will not vary by more than the predetermined slew rate.** claim 1 not in claim 1, 6

Applicant has added emphasis to the last line of the office action statement in order to highlight one of the many technical differences between "process delaying" as disclosed by Gadeyne, and "slew rate limiting" as claimed by applicant.

Gadeyne, column 3 lines 35 - 42 states:

> "The conversion is so that the second video signal causes the luminance time response of a picture element of the image to a change of the first video signal from a first amplitude value to a second amplitude value to be substantially equal in shape and amplitude but reversed (i.e., inverted) in slope compared to the luminance time response of the same or another picture element of the image to a change of the first video signal from the second amplitude value to the first amplitude value."

From the paragraph above it is clear that "process delaying" has the aim of matching the shape and amplitude of a luminance rise time to a shape and amplitude of a luminance fall time, without regard to any difference, per se, in successive drive signal levels. See Gadeyne specification col 2 lines 1-4, which states: "Various solutions are known for changing luminance response times with LCD display devices. They however have the aim to shorten the overall luminance response times, not to make the luminance rise and fall times equal."

Gadeyne discloses the following process delaying technique for making luminance rise and fall times equal:

> "From the present value of the first video signal 33 is subtracted in,the subtractor 36 a value FR which corresponds to the present luminance as it was predicted one correction period before. The result is a value .DELTA.. **The value .DELTA. determines how the luminance will have to change during the next correction period. Luminance should increase or rise when .DELTA. is positive, decrease or fall when .DELTA. is negative, and remain equal when .DELTA. is zero.** " The value .DELTA. is applied to a first input of the processing block 39. At a second input is applied the predicted present luminance FR. With as input values .DELTA. and FR and if present the input of one or more temperature values TL related to the connected display screen, are determined two output values, .DELTA.C and .DELTA.R. How these values .DELTA.C and .DELTA.R can be determined is explained further. .DELTA.C is a correction value to be added to the predicted present luminance FR in order to reach a chosen luminance (to match to a chosen response) at the end of the next correction period. .DELTA.R is the value with which the luminance will have changed after the next correction period when .DELTA.C is added to the predicted present luminance FR taking into account the parameters of the display screen (of which some are screen-location, voltage and temperature dependent)."

From the above description, one of ordinary skill in the art would readily determine that process delaying as taught by Gadeyne does not operate to limit slew rate as applicant defines the term slew rate.

Applicant's invention is directed to limiting the brightness difference between adjacent pixels, which is a different problem from that of Gadeyne. Applicant clearly defines what is meant by applicant's claim term "slew rate limiting" in this context. See applicant's specification paragraph 21:

> "The details of each slew rate limiter 22 are shown in FIG. 2. **Slew rate limiter 22 assures that successive output signals from the slew rate limiter will not vary by more than the predetermined slew rate.** A gamma corrected video drive signal is an input to an algebraic unit 221. The other input to the algebraic unit 221 is the preceding output 233 of the slew rate limiter stored in latch 232. The last output value, which is a gamma corrected, slew rate limited value, is subtracted from the input value to determine

the difference. The difference on output line 222 is an input to a first comparator 224 denoted MIN and a second comparator 225 denoted MAX. The difference is tested in the MIN circuit to see if the difference is greater than a positive slew limit S and is also tested in the MAX circuit to see if the difference is more negative than the negative slew limit -S. It is not necessary that the positive and negative slew limits have the same absolute value, although the same absolute value is used in the embodiment shown in FIG. 2. "

From the foregoing it will be readily apparent to those of ordinary skill in the art that Gadeyne's teaching "process delaying" is not a teaching of "slew rate limiting". Further, those of ordinary skill in the art can readily appreciate that Gadeyne's teaching would not result in slew rate limiting, that is, insuring that successive output signals will not vary by more than a predetermined slew rate. Thus Gadeyne's teaching is not a teaching of slew rate limiting as defined in applicant's specification.

Furthermore, applicant's claims 1 and 6 recite a specific limitation that the signal to be slew rate limited is a **gamma corrected signal**. Gadeyne teaches against process delaying a gamma corrected signal. Gadeyne states: (col 7, lines 37 - 39)

"it is assumed the values are linearly related to luminances on the display screen and that the first and second video signals are not gamma-corrected. "

Thus it is seen an underlying assumption of Gadeyne is that there is a linear relationship of values to luminances on the display screen. Absent such a linear relationship, Gadeynes teachings are not applicable. Gamma corrected signals lack such a linear relationship.

The office action states, "Gadeyne teaches how his invention uses gamma-correctors (35, 40) *(see* column 7, lines 22-45, figure 13 at 35, 40)." Specifically the text cited by the office action reads as follows:

"It will however be easy to extend the apparatus for gamma-corrected video signals by the addition of an inverse gamma-correction 35 at the input side, and a gamma-correction 40 at the output side..."

Thus, Gadeyne clearly teaches to remove gamma correction from the signal at the input side and then, to add the gamma correction back at the output side of the process delaying circuit. Thus the Gadeyne teaches NOT to perform process delaying on gamma corrected signals. This is the opposite of applicant's claimed invention. In other words, Gadeyne teaches in order to extend the apparatus for gamma corrected video signals, any gamma correction is to be removed by an "inverse gamma correction"...

"For the description of the apparatus 32, it is assumed that the values are linearly related to luminances on the display screen and that **the first and second video signals are not gamma-corrected.** It will however be easy to extend the apparatus for gamma-corrected

video signals by the addition of an **inverse gamma-correction 35** at the input side, and a gamma-correction 40 at the output side, or by integrating gamma-awareness into the apparatus 32."

Applicant's apparatus claim 6, as amended, recites, in relevant portion, " ...a device for gamma correcting a video drive signal for providing a gamma corrected video drive signal; and a slew rate limiter coupled to said device for gamma correcting so as to receive said gamma corrected drive signal, for slew rate limiting said gamma corrected video drive signal."

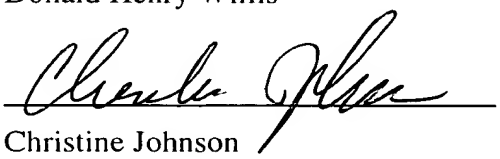
Gadeyne lacks any teaching of a "device for gamma correcting coupled to a slew rate limiter..." In fact, Gadeyne teaches against this structure.

For that reason, among others, the teachings of Gadeyne regarding process delaying cannot be taken alone, or in combination with other references, to arrive at applicant's invention of slew rate limiting a gamma corrected signal.

Having fully addressed the Examiner's rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at (609) 734-6892, so that a mutually convenient date and time for a telephone interview may be scheduled.

No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,
Donald Henry Willis



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Eliza Buchalczyk